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What does it sound like when you turn Nasa spacecraft data into music?

听一听用航天器数据创作的音乐作品

本集内容

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文字稿

What you can hear is the sound of Nasa spacecraft data translated into music.

你听到的是用美国国家航空航天局的航天器传回的数据转换成音乐的声音。

Dr Domenico Vicinanza, Senior lecturer, Anglia Ruskin University
"This is Voyager 1 crossing the border of the Solar System and entering the interstellar space."

多米尼克·维辛纳扎博士　　安格利亚鲁斯金大学高级讲师
“这是用旅行者 1 号探测器穿越太阳系边界、进入星际空间时传回的数据转换而成的旋律。”

Voyager 1 was launched on September 5, 1977. It was the first object to reach interstellar space in August, 2012.

旅行者 1 号探测器于 1977 年 9 月 5 日发射升空。2012 年 8 月，旅行者 1 号探测器成为了第一个抵达星际空间的物体。

Now sonification has been used to turn that data into music.

现在利用可听化技术，数据被转换为音乐。

Dr Domenico Vicinanza, Senior lecturer, Anglia Ruskin University
"Sonification is a way to map numbers to music notes. So, for example, 25 can be mapped to C. 26, C sharp. 27, D. So, every time my experiment returns a 25, I can play a C on my piano, flute, glockenspiel. Every time I have a 27, I play a D."

多米尼克 • 维辛纳扎博士　　安格利亚鲁斯金大学高级讲师
“可听化是一种将数字转换为音符的技术。比如：数字 25 可记为 C 音；数字 26 可记为升 C 音；数字 27 可记为 D 音。所以，我的实验每得出数字 25，我就可以在钢琴、长笛或钟琴上弹 C 音。我每得到数字 27，我就会弹 D 音。”

For this composition, Domenico picks numerical data Voyager 1's plasma antenna collected as it entered interstellar space.

在这段乐曲中，多米尼克选择了旅行者 1 号探测器进入星际空间时它的等离子天线收集的数值数据。

Dr Alyssa Schwartz, Director of Bands, Fairmont State University
"There's a very distinctive point in the data and therefore in the sound where Voyager crossed the boundary. No longer in our Solar System. So, there was a really big jump in register. The flute part kind of had to go way up high, and then it became super soft and super high for the rest of the piece.

艾丽莎 • 施瓦茨博士　　费尔蒙特州立大学乐队指导
“数据中有一处与众不同，即旅行者 1 号探测器穿越边界、离开太阳系的时刻，乐曲中也反映了这一点。所以，乐曲中有一处音区突然升高。长笛部分的音调必须升高，然后笛声变得非常柔美、音调高昂，直到乐曲结束。

And that super noticeable change in dynamic, right? It was like it got softer, it got thinner. [It] made it feel like a whole new thing. You know, you could almost feel the distance between you and Voyager."

此外，力度的变化也非常明显，乐曲的力度更弱、更单薄了。这个变化让乐曲听起来焕然一新。你几乎可以感觉到你与旅行者 1 号探测器之间相隔万里。”

Domenico has worked with Alyssa on previous sonification projects, like this piece using Mars weather simulation data.

多米尼克曾与艾丽莎在其它数据可听化项目中一起合作过，比如这段用火星天气模拟数据创作的音乐。

Dr Domenico Vicinanza, Senior lecturer, Anglia Ruskin University
"I think science is very much a quest for harmony and symmetry and patterns in the same way as music is. Music can be used so effectively to tell stories about the environment around us."

多米尼克 • 维辛纳扎博士　　安格利亚鲁斯金大学高级讲师
“我认为在很大程度上，科学是对和谐、对称和模式的一种追求，这一点与音乐相同。音乐可以有效地用来讲述我们周围环境的故事。”

视频链接

https://www.bbc.co.uk/learningenglish/chinese/features/lingohack/ep-230427